Vertigo Workshop Laser Cutting Guide

Introduction

Welcome to the how-to for getting your files laser cut on the Vertigo workshop laser cutter! Here you can get all your projects laser cut for a small price, from various materials available in the Vertigo workshop.

The machine we use is a Trotec Speedy 300. This machine has a maximum material size of 700 by 400 millimeters, and uses a powerful CO_2 laser to precisely cut out (almost) anything you want.

This guide will help you prepare your projects for cutting on this laser, to guarantee the cutting process goes smoothly, and so you can have them in your hands as soon as possible!

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Costs

To get your project cut on the laser, we ask for a set-up fee of 5 euros. This cost is per project, so whether you have one sheet to cut, or five, the cost stays the same. This fee is paid upfront, and once it's paid, your project will be queued up for cutting.

When picking up your project, you'll be asked to pay the material cost for the materials used. In case you already have some material that you'd like to use for your project, you can discuss this at the laser cutting desk, or at the Vertigo workshop counter, for example when handing in your USB stick.

Materials

A lot of the materials available in the Vertigo workshop can be laser cut. Below is a list of materials you can use for your laser cutting projects, and whether they can be engraved and/or marked (similar to engraving but for thin lines), too.

Material	Thickness	Engraving	Marking
Akyprop	0.5 – 1.2	✗	✗
Balsa	2	✓	✓
Cardboard	0.5 – 2	✓	✗
Effencraft	1	✓	✗
Frameboard	2	✓	✓
Kraftliner	0.4	✓	✗
MDF	3 - 6	✓	✓
Plywood	1 – 3.2	✓	✗
Vivak/Perspex	0.5 – 6	✓	✓
Woodboard	2	✓	✓

Table 1: The materials available for cutting at the Vertigo workshop

For the costs of these materials, check the price list at the Vertigo workshop counter. An online version of this list can be found **here** or with the QR code below, though the physical list is leading!

Recommended software

For creating your laser cutting files, you can use any software you like. However, we recommend using Adobe Illustrator, CorelDRAW, AutoCAD or similar vector editing software that supports lines with a thickness of 0mm. Important is that we can import your files, so if you're uncertain whether your favorite software is appropriate, feel free to ask us at the laser cutting desk.

Preparing your files

Before you submit your files for cutting, there are a few things to do and/or check:

1. **Make sure your scale is correct.** If you ask us to cut something that's a kilometer long, your wallet likely will not enjoy the material cost, nor will we enjoy cutting it.
2. **Check your origin.** To help us actually find your drawings, please make sure they are placed close to (or better yet, at) the origin point in your file. For example, if you're working in an existing map, make sure you move your drawing close to the origin before submitting your files.
3. **Make sure your project fits on the laser.** The maximum dimensions per sheet of material are 700x400mm, but we ask you to keep a 5mm margin around the outside of each sheet. Therefor the maximum working area is 690x390mm.
4. **Make sure no lines overlap.** If you have two lines on top of each other, the laser will go over that line twice. This adds extra cutting time, and likely makes the finish of your project less nice, as there will be a lot more heat than necessary along that line.
5. **Combine lines efficiently.** This saves a lot of time when cutting, which makes everyone happy. The laser cuts are very thin, so you can have multiple objects share a line without problems!
6. **Check your line thickness.** Make sure your lines are either 0.000mm or 0.001mm thick or listed as "hairline". (How to do this depends on your software, but lines wider than that will be engraved and not cut.)
7. **Check your colors.** The laser only understands specific colors and follows a set order through those. Make sure your RGB values line up with those in table 1 below. From top to bottom is the color order the laser uses. White is ignored and can be used to mark individual material sheets within your project.
8. **Add comments!** To guarantee the right materials are used for the right parts, add comments of the material and thickness you would like to be used for each plate you have in your file(s). Please put these next to the sheet(s) in your file(s), to ensure they won't be cut.

Color	RGB	CMYK	Used for
White	255,255,255	0,0,0,0	Framing sheets within your project. (Ignored by the laser.)
Black	0,0,0	0,0,0,100	Engraving surfaces, pictures, text etc.
Red	255,0,0	0,100,100,0	Marking lines (engraving vector lines, so also single line or outlined text)
Blue	0,0,255	100,100,0,0	Cutting lines
Desert Blue	97,111,133	40,20,0,40	
Cyan	0,255,255	100,0,0,0	
Green	0,255,0	100,0,100,0	

Table 2: The colors available for your projects.

If you need more options than this, please talk to the people at the laser cutting desk. They can help you optimize your file or give you more colors to use.

Submitting your files

To submit your files, you can drop off a USB stick with your files at the Vertigo workshop counter or laser cutting desk. Make sure your files are correctly prepared (more on this in the section "Preparing your files"), and that you have any extra details in a text document on the USB stick. **Include your e-mail address in this file, in case we need to contact you about your project!** Make sure there is no other data on your USB stick. (This is to prevent accidentally cutting the wrong files, or us having to search for the correct ones!)

We can handle most vector and image file types, but ideally your files should be in a vector format. If you're unsure about your file format, please check with the people at the laser cutting desk.